RAMTEQ®
QUALITY PRESSURE WASHERS

OPERATOR'S MANUAL

HV SERIES
Electric Motor - NG/LP fired

READ THIS MANUAL

This manual contains important information for the use and safe operation of your RAMTEQ® machine. **FAILURE TO READ THIS MANUAL AND FOLLOW ITS INSTRUCTIONS PRIOR TO OPERATING OR ATTEMPTING ANY SERVICE OR MAINTENANCE PROCEDURE COULD RESULT IN SERIOUS INJURY OR DEATH TO YOU OR OTHER PERSONS; ALSO DAMAGE TO THE MACHINE OR TO OTHER PROPERTY.**

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Unpacking Instructions

INSPECTION

Carefully unpack your new RAMTEQ equipment by removing the banding and cardboard box from pallet. Remove the pressure washer from the pallet and check for any physical damages that may have occurred during shipment. Check for all parts specified and shown below.

INCLUDED PARTS

- Pallet
- Packing Material Outer Box
- HV Series Machine
- Operator's Manual
- Wand / Trigger Gun
- Nozzles 0° 15° 25° 40°
- Hose 3/8" X 50'
- QC Hose Fittings

NOTICE

Information in this operator's manual is subject to change without notice.

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Safety Guidelines

READ THIS FIRST! **FAILURE TO READ AND OBSERVE ALL WARNING STATEMENTS COULD RESULT IN SEVERE BODILY INJURY OR DEATH, POSSIBLE INJURY TO OTHER PERSONS, DAMAGE TO MACHINE OR OTHER PROPERTY.**

- DO NOT operate this machine in areas where open flames are not permitted. DO NOT store or use combustible materials on or near this machine. Use this equipment only in well ventilated areas. Failure to follow this warning may cause carbon monoxide build up, fire or explosion, and possible injury or death.
- DO NOT operate this machinery unless the gas installation has been done by a competent professional and the installation meets all federal, state, and local codes.
- DO NOT operate this machine while under the influence of alcohol, drugs or while fatigued.
- DO NOT direct discharge stream at yourself or others. Risk of injection or injury may occur. Never put your hand or fingers over the spray tip. Do not try to stop or deflect leaks with your hand or body. Always face nozzle and wand to the ground when testing.
- DO NOT operate this machine WITHOUT wearing protective Eye Wear. Gloves, Hard Hat, Mask, Ear Plugs & Steel Toe Work Boots are also recommended, DO NOT wear loose clothing. Keep your body and clothing clear of the engine and discharge stream when the machine is running.
- DO NOT tie back or block trigger gun in OPEN position. Never leave the pressure washer unattended once you have started it. If you leave, shut down machine completely.
- DO NOT overreach or stand on an unstable support while operating this machine. Maintain good footing and balance.
- DO NOT permit this machine to run while unattended or for extended periods of time with trigger gun closed. Damage to pump may occur.
- DO NOT operate this machine in an unsafe manner or around unsupervised children. Keep all other personnel clear while operating this machine. This product should only be operated by trained personnel.
- DO NOT alter original factory settings prior to operating this machine. Risk of injury to yourself or other persons may occur.
- DO NOT remove hoses, guns, nozzles or any components while this machine is still hot or while it is running.
- DO NOT attempt to service this machine before reading the service manual.
- DO NOT use water with a temperature over 140 degrees Fahrenheit
- DO NOT use any electrical outlet that is not properly grounded or does not comply with all federal, state, and local laws and/or electrical codes
- DO NOT operate this machine without knowing how to stop and bleed water pressures. Know all controls before using this machine.
- DO NOT spray caustic, acids or abrasive fluids through this machine.
- DO NOT permit water to freeze inside this machine. Pump and plumbing damage may occur.
- Use only recommended RAMTEQ parts when servicing this machine.
- RAMTEQ will not be held liable for any unauthorized modifications made to this machine. Any such action will void the warranty.

Installation Instructions

LOCATION & INSTALLATION GUIDELINES

- Locate the machine on a solid and level surface so that engine and pump crankcase oil lubricate components properly. Avoid areas where water can build up in the working area. Possible injury can occur caused by the surface becoming slippery from water build up.
- Locate the machine in a well-ventilated area and away from flammable materials or fumes. Be sure ventilation warnings are observed. Keep pressure washer at least 18" away from flamable materials.
- Locate the machine so the operator has easy access to the pressure washer and its controls. Locate the machine so that it is protected from external damage.
- Confer with local gas company, and with proper municipal officials regarding any specific code or regulations governing this installation. Installation must conform with all local codes prior to operation of machine.
- A draft diverter hood must be installed and vented to the outside.
- Check gas union located under burner ring prior to operation. Soap test gas pipe fittings for leaks once pressurized.
- To prevent damage and excessive hose wear, locate the pressure washer so that the hose does not cross traffic areas
- The gas line should be a separate supply direct from the meter to the burner. New pipe is recommended to be used and located so that a minimum amount of work will be required in future servicing. The piping should be so installed as to be durable, substantial and gas tight. It should be clear and free from cutting burrs and defects in structure of threading. Cast iron fittings or aluminum tubing should not be used for the main gas circuit. Joint compounds (pipe dope) should be used sparingly on male threads only and be approved for all gases.
- The following pipe sizes should be used between the meter and the machine:

Natural Gas	**Distance from Meter**	**Pipe Size**
	0 - 50'	1-1/2" 1 PS
	50' - 100'	2" 1 PS
	100' - 200'	2-1/2" 1 PS
Liquid Propane	**Distance from Meter**	**Pipe Size**
	0 - 50'	1" 1 PS
	50' - 100'	1-1/2" 1 PS
	100' - 200'	1-3/4" 1 PS

- Venting: A vented draft diverter hood should be used with all indoor installations. Poor draft will cause the machine to soot and not operate efficiently. Positioning of the machine should be in such a manner so that the stack is as straight as possible and have suffecient height to eliminate downdraft.

Natural Gas & LP Installation Checklist	**Checked**
■ Has gas supply been inspected by an authorized contractor and meets all local codes?	_____
■ Is machine protected from downdraft and excessive wind?	_____
■ Is machine shielded from moisture of water spray?	_____
■ Is voltage correct and circuit breaker adequate according to specifications and serial plate notations?	_____
■ Is the machine electrically grounded?	_____
■ Have all flammable liquids or gases been removed from location?	_____
■ Is there adequate gas supply for BTU rating of the burner?	_____
■ Is incoming gas supply pressure between 6" and 14" water column?	_____
■ Has the proper gas regulator been installed with proper pressure and volume?	_____
■ Is machine properly vented allowing adequate air flow?	_____
■ Are the propane tanks large enough to prevent freezing?	_____
■ Have gas lines been checked for gas leaks?	_____

Operating Instructions

STARTING THE MACHINE

Following the steps below will insure successful operation:

- Read this manual completely before attempting to start the machine.
- Check that the Motor/Burner switches are in the "OFF" position
- Check the pump oil level and fill with SAE 30w *non-detergent* oil if needed.
- Connect water hose to pump (or float tank if equipped). Turn on water source.
- Connect the power cord to a properly grounded power source.
- Turn the manual gas valve to "ON" position. Adjust incoming gas to 12" wc minimum for LP unit, 5" wc minimum for NG (maximum14"wc or 1/2psi). The correct operating manifold pressure for natural gas is 3.5" wc and 11" wc for propane.
- Attach high pressure hose to base of spray gun.
- Install water nozzle at the end of wand, making sure it is clear of any obstructions.
- Turn pump switch to "ON"
- Pull trigger on gun until a steady stream of water comes out the nozzle. This purges any air in the system.
- Check for leaks in the system and cycle trigger gun to insure bypass is adjusted correctly. Repair any leaks and correct unloader adjustment if needed. Turn off machine before attempting any repairs.
- Turn burner switch to "ON". Check for buner ignition.
- Adjust thermostat to desired temperature appropriate to the task. Maximum temperature setting may not be needed.
- Insert detergent siphoning tube into a DOT approved container and open the metering valve for detergent application.

WASHING TECHNIQUES

- Washing from bottom up increases dwell time of soap and lessens vertical streaks.
- Turn soap metering valve "OFF" to purge system of soap
- Rinsing with cold water from top down will retard detergent reaction which will enhance the rinsing performance.
- Wash at 30 to 60 degree angles to prevent splashback.

STOPPING THE MACHINE

- Turn burner switch to "OFF". Allow water to discharge for a few minutes while cooling down.
- Turn pump switch to "OFF".
- Disconnect water source.
- Pull gun trigger to release water pressure from system.
- Disconnect wand & gun assembly.
- Wind up pressure hose on hose reel.

Maintenance Instructions

MAINTENANCE PRECAUTIONS

- Do not permit acidic, caustic or abrasive fluids to be pumped through system.
- Periodically clean detergent inlet screen. This will ensure proper flow of water to the pump.
- High mineral content in water may adversely affect your machine and may require the use of a water softener to ensure proper operation.
- NEVER run the pump dry under any circumtances. Doing so will cause exteme damage to the pump.

FAILURE TO MAINTAIN HEAT EXCHANGER COIL MAY RESULT IN A STEAM EXPLOSION WHICH MAY CAUSE SERIOUS INJURY OR DEATH.

EXCHANGER COIL MAINTENANCE

- Hard water conditions may eventually cause clogging in the heat exchanger coil if left unattended. Scale deposits will compromise the heating efficiency and produce an unsafe condition over time. It may be necessary to descale coil.
- Scale buildup from certain detergents may eventually clog up the heat exchanger coil causing an unsafe condition. Use only recommended detergents for better cleaning efficiency.
- Black carbon deposits that collect on the outside wall of the heat exchanger coil may be a result of using a poor grade of fuel or improper burner operation. Heating fuel should be void of water and sediments to eliminate the possibility of sooting and compromising the efficiency of the coil.

MOVING, STORAGE

- Place machine in covered area when not in use to protect from elements.Protect machine from freezing in cold temperatures by storing in a heated location.

WINTERIZING

- Non-float Tank Machines: To protect the machine from freezing temperatures while storing or transporting, connect short length of garden hose (approximately 3 ft.) to water inlet connection on machine. Remove the pressure nozzle from the wand and insert the short garden hose end into a container of antifreeze. Place the wand into the antifreeze container and start engine running machine until antifreeze appears from the end of the wand. Turn engine "OFF" and replace pressure nozzle. Coil up hose and move machine to storage area.
- Float Tank Machines: Pour antifreeze into float tank and remove water nozzle from end of wand and carefully insert into opening of float tank. Start machine and run until antifreeze water mixture has circulated throughout the machine returning back to the float tank.

PUMP MAINTENANCE

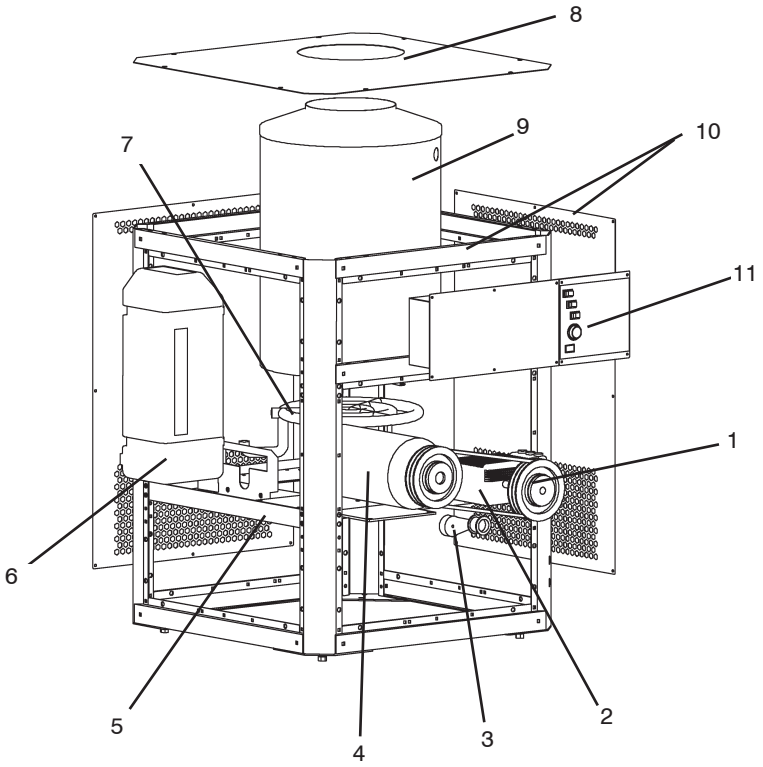
- Fill crankcase to dot on oil gauge window per specifications with the specific oil created by the pump manufacturer (i.e. **General Pump Oil**). Ensure the right oil for specific pump as it may vary.
- Change oil after **40 Hour Break-in Period.**
- Change oil every **Three Months or at 500 Hour Intervals** thereafter.

UNLOADER ADJUSTMENT

- All RAMTEQ machines have the unloader correctly set at the the factory. Setting an unloader is a difficult job without the proper equipment and training. Should the need arise to change the unloader settings, please contact your local distributor.

General Unloader

CHANGING THE UNLOADER SETTINGS WITHOUT THE PROPER EQUIPMENT AND TRAINING MAY RESULT IN NON-WARRANTY DAMAGE TO THE PUMP.



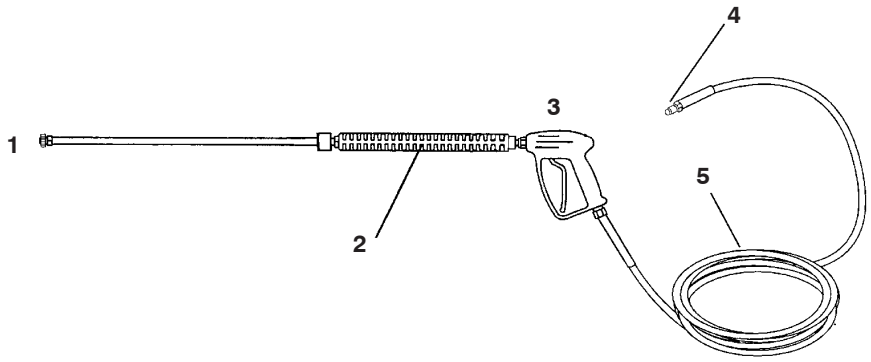
Part	Part #	Description	Qty
Pump, Motor, and Power Plate Assembly			
1	**Pump Pulley, and Belts**		
	584-00003-01	Pulley 2TB80	1
	516-00004-01	Bushing, SP, split taper, Q1-24mm	1
	586-00003-32	Belt, B59	2
2	**Pump Assembly**		
	220-00025-01	Pump, AR#XWA8G30N-SX (left handed shaft)	1
	500-00011-05	Screw, Black oxide,Hex recess 10-1.5x18mm	4
	513-00001-04	Washer, SS, Helical spring lock, 10mm	4
3	**Belt Tensioner Assembly**		
	585-00015-01	Fenner drive belt tensioner #FS0108	1
	513-00004-01	Washer, Helical spring lock, 3/8, SAE	1
	505-00003-04	Bolt, SS, Hex, 3/8-16x1.25"	1
4	**Motor Pulley Assembly**		
	584-00003-01	Pulley 2TB80	1
	516-00006-01	Motor Bushing Q1- 1 5/8	1
5	**Motor and Power Plate Components**		
	200-00008-01	Motor, 15.0HP, 230/60/3, Baldor M2513T	1
	580-00001-03	1" Romex Cable clamp	1
	505-00010-05	1/2-13 x 1.50" hex bolt	4
	513-00019-01	1/2 flat washers	8
	513-00021-01	1/2 lock washers	4
	508-00001-08	1/2 nuts	4
	180-00217-01	HV, Powerplate, Sheet metal frame	1
	180-00211-01	Power Plate, HV	1
	505-00006-09	Bolt, SS, Carriage, 3/8-16x2.5"	4
	505-00003-09	Bolt, SS, Hex, 3/8-16x2.5"	2
	508-00001-03	Nut, SP, Hex, 3/8-16	6
	513-00010-04	Washer, SS, 3/8"ID, 1"OD, .083"THK	8
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	6

Part	Part #	Description	Qty
Float Tank and Pump Plumbing			
6	**Float Tank Inlet Plumbing**		
	190-00001-01	HV, Float Tank (modified diesel tank)	1
	180-00175-01	Strap,Tank Torsion, 304SS, 3 ga. .244"	1
	518-00002-01	Fitting, 1/2 fpt ID x float tank bulkhead	1
	565-00001-01	O-ring, 2-120, 70 durometer nitrile	1
	522-00010-01	Connector, Garden hose, 3/4 swivel x 1/2 mpt close	1
	515-00002-01	Washer, rubber for 3/4" ghf	1
	557-00001-03	Hose clamp, SS, #12 6	1
	280-00002-05	Hose, low pressure, 3/4" ID, (two pieces 6")	46"
	535-00011-01	Y, connector, 3/4" YA-34	1
	531-00006-05	Hose barb, 3/4HB x 90°x 3/4FPT (gray PVC)	2
	569-00030-01	Valve, Float, High capacity diaphragm type, 3/4	2
	280-00002-03	Hose, low pressure, 1/2" ID,	2.6"
	557-00001-01	Hose, Clamp, SS, 0.25"-0.63" diam.	2
	530-00002-04	Elbow, brs, 1/4mpt x 90° x 3/8hb	1
	518-00001-01	Plug, brs, 1/4nptm hex	1
	Float Tank Outlet Plumbing to Pump		
	518-00002-01	Fitting, 1/2nptf I.D.float tank bulkhead	1
	526-00001-03	Nipple, close, brs, 1/2"nptm	1
	554-00002-01	Fitting, inlet strainer	1
	518-00004-02	Plug, brs, 3/8 nptm hex MODIFIED	1
	554-00003-05	Conn, brs, 1/2nptm x 3/4barb	1
	538-00007-01	Tee,branch,brs,1/2 npt	1
	582-00003-02	Bushing, brass, 1/2 mpt x 1/4 fpt	1
	554-00003-07	Connector, brass, 1/4 mpt x 1/4 hb	1
	530-00014-06	Elbow, brass, street 1/2 90°	1
	Float Tank Bracket		
	180-00214-01	Bracket, float tank HV	1
	505-00006-03	Bolt, SS, Carriage, 3/8-16x1"	2
	508-00001-03	Nut, SP, Hex, 3/8-16	2
	513-00009-03	Washer, SS, 5/16"ID	2
	513-00004-01	Washer, SS,Helical spring lock, 3/8, SAE	2
	Pump Plumbing and Components		
	557-00001-03	Hose clamp, SS, #12 2	
	280-00002-05	Hose, low pressure, 3/4" ID, 200PSI, black	1
	530-00014-04	Elbow, brass, street, 3/4"	1
	582-00004-04	Bushing, brass, 3/4nptm x 1/2nptf	1
	530-00004-04	Elbow, brs, 1/2"nptm x 1/2" barb, 90°	1
	557-00001-02	Hose clamp, SS, 0.40"-0.90" diam.	2
	281-00004-01	Swivel, brs, #8jic fem x1/2 barb	1
	284-00012-02	1/2" Hose, 40" long crimmped fittings	1
	528-00002-02	Elbow, street, sp, 3/8nptm x 3/8nptf, 90°	2
	517-00002-01	Bushing, SP, 3/8 nptm x 1/4 nptf	1
	574-00002-01	Pressure switch, GP	1
	574-00008-01	Phoenix Valve (Flow Switch GP100329)	1
	230-00011-01	Pulsar Unloader 3KHP	1
	Chemical Injection		
	557-00001-01	Hose clamp, SS, 0.25"-0.63"diam	3
	554-00003-07	1/4 npt x 1/4 hose barb BRASS	1
	530-00002-02	Elbow, brs, 1/4nptm x 1/4 barb, 90°	1
	285-00002-01	Tubing, clear, 1/4"ID, 3/8"OD	96"
	570-00002-01	Check valve, plastic, .25", w/ screen	1
	513-00019-01	1/2 flat washer	1
	567-00018-02	Grommet, 11/16" ID	1
	569-00026-01	Valve, Soap control	1
	Coil Plumbing	**Inlet and Outlet**	
	524-00004-01	Pipe nipple, galv, 1/2nptm x 2.5"long	1
	536-00006-05	Tee, box, SP,1/2nptf	2
	554-00007-04	QC coupler socket, brs, 1/2", nptf	1
	284-00013-01	1/2" high pressure hose, 24" long, crimped fittings	1
	524-00002-05	Nipple, SP, 1/2 mpt	1
	557-00001-02	Clamp, hose, .400-.900	1
	230-00011-01	Pulsar unloader less outlet checkvalve	1
	280-00002-02	Hose low pressure 3/8	55"
	530-00003-04	Elbow , brass, 3/8 mpt x 3/8 hb x 90°	1
	518-00004-01	Plug, brs, 3/8nptm hex	1
	540-00004-02	Coupling, SP, 1/2	1
	528-00006-02	Elbow, Street, SP 1/2"	1
	513-00022-02	Washer, SS, 7/8 ID Flat	2
	524-00012-03	Nipple, Sch 80, 1/2 close, galv.	1

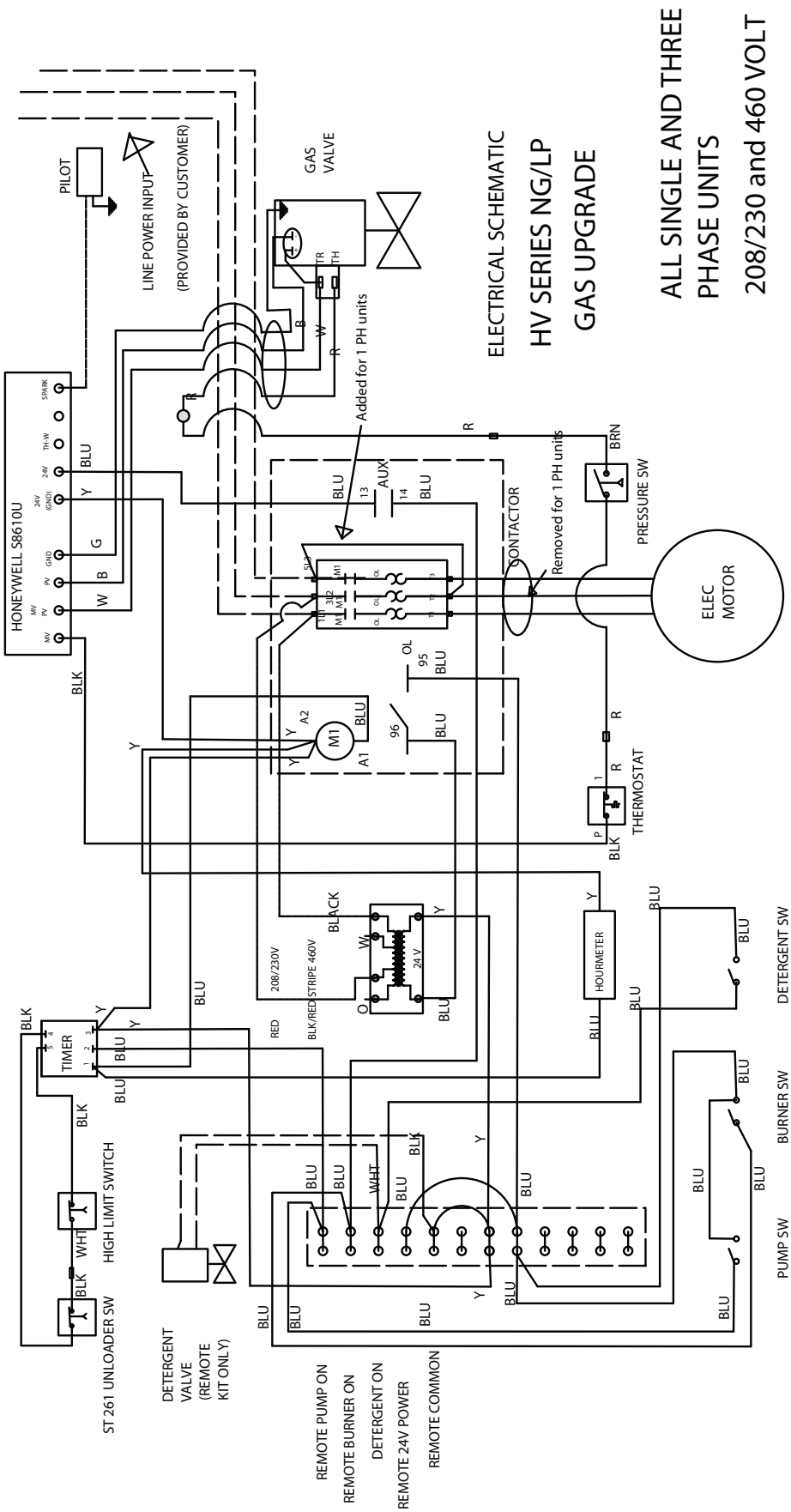
Part	Part #	Description	Qty
Burner Ring Components			
7	**Burner Assembly**		
	504-00007-02	U-bolt, 1.5" wide x 2" long, 5/16-18 un	1
	513-00003-01	Washer, Helical spring 5/16"	2
	513-00009-03	Washer, SS, 5/16"ID	2
	508-00001-02	Nut, SP, Hex 5/16-18	2
	180-00102-02	Pilot bracket for round ring burner, for X88	1
	569-00009-01	Pilot, Burner assbly, #Q379A1015	1
	501-00004-01	Scr, SS, Slot Cap, No.12x32, .250"	2
	285-00004-01	Tubing, coiled, aluminum 3003	2.75'
	250-00015-01	X-88 Solarflo Gas Burner Ring, #52 spuds	1
	517-00005-01	1 1/4" to 1" bushing steel	1
	524-00006-02	1" close pipe nipple Black Pipe	1
	524-00011-01	Nipple, Black pipe, 1"npt x 1.5"	2
	528-00010-02	Elbow, Black pipe 1"	3
	560-00002-01	Union, Black pipe 1"	1
	524-00011-04	Nipple, Black pipe, 1"npt x 5"	1
	524-00011-05	Nipple, Black pipe, 1"npt x 6"	1
	528-00008-12	Ell, Street, 45° 1"	1
	569-00021-01	Valve, Regulator, NG/LP, Robertshaw #453501532	1
	180-00209-01	HV, Gas pipe bracket	1
	505-00006-03	Bolt, SS, Carriage, 3/8-16 x 1"	2
	513-00009-03	Washer, SS, 5/16	2
	513-00004-01	Washer, SS, Helical spring lock 3/8	2
	508-00001-03	Nut SP 3/8-16	2
Burner Roof Components			
8	**Roof Panel Hardware**		
	180-00212-01	HV, Coil Roof	1
	505-00006-03	Bolt, SS, Carriage, 3/8-16x1"	8
	508-00001-03	Nut, SS, Hex, 3/8-16	8
	513-00009-03	Washer, SS, Plain, 5/16 wide	8
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	8
Coil Assembly			
9	**Coil Hardware**		
	155-00007-01	HV, 23 Dia.Coil, 30" tall, 6 pancake	1
	180-00037-01	Bracket, Coil, Universal	3
	505-00003-09	Bolt, SS, Hex, 3/8-16x2.5"	2
	505-00003-03	Bolt, SS, Carriage, 3/8-16 x 1"	1
	508-00001-03	Nut, SP, Hex, 3/8-16	3
	513-00010-04	Washer, SS, 3/8"ID,1"OD, .083"THK	6
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	3
	191-00006-01	Insulation, blanket, 1", 24"wide, 4# x 6.25'	1
	191-00006-01	Insulation, blanket, 1", 6"wide, 4# x 6.25'	1
	180-00215-01	HV, Coil Cap	1
	191-00006-01	Insulation, blanket, 1", 24"wide, 4#	2'
	180-00203-01	HV, Galvanized Coil Wrap	1
	500-00004-01	#10 self drilling sheetmetal screws	5
Panels and Frame Assembly			
10	**Stainless Panels and Hardware**		
	180-00207-01	HV, closeout panel, large	3
	505-00001-03	Bolt, SS, Hex, 1/4-20, 1"	24
	513-00008-01	Washer, SS, Plain,1/4, Narrow	24
	180-00208 -01	HV, closeout panel, small	1
	505-00001-03	Bolt, SS, Hex, 1/4-20, 1"	8
	513-00008-01	Washer, SS, Plain, 1/4, Narrow	8
	Corner Post Pre-Assembly		
	180-00201-02	HV, corner posts with openings	2
	180-00201-01	HV, corner posts without openings	2
	508-00002-08	Nut, SP, Cage, 1/4-20, .125-.156	39
	567-00027-01	Plug, dome, nylon, 2.5", heyco #2790	1
	Crossbar Pre-Assembly		
	180-00206-01	HV, Crossbar	9
	Crossbars to Cornerposts		
	505-00006-07	Bolt, SS, Carriage, 3/8-16x2.0"	18
	508-00001-03	Nut, SP, Hex, 3/8-16	18

Part	Part #	Description	Qty
Panels and Frame Assembly Continued			
	513-00010-04	Washer, SS, 3/8"ID, 1"OD, .083"THK	18
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	18
	Leveler Bolts to Reinforcement Plates		
	505-00012-11	5/8-13 x 3.00" hex bolt	4
	508-00009-05	5/8-13 Jam nuts	4
	513-00011-01	Washer, SS, 5/8"ID	4
	Reinforcement Plates to Crossbars & Crossbeam		
	180-00205-01	HV, Reinforcement Plate	4
	505-00006-03	Bolt, SS, Carriage, 3/8-16x1"	16
	508-00001-03	Nut, SP, Hex, 3/8-16	16
	513-00009-03	Washer, SS, 5/16"ID, .875"OD, .083"THK	16
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	16
	Powerplate Mounting Bar To Frame		
	180-00215-01	HV, Powerplate, Mounting Bar	3
	504-00002-23	Bolt, countersunk, 5/16-18x 1	12
	513-00009-03	Washer, SS, 5/16"ID, .875"OD, .083"THK	12
	513-00003-01	Washer, SS, Helical spring lock, 5/16, SAE	12
	509-00001-02	Nut, SS, Hex, 5/16-18	12
Control Box Assembly			
11	**Control Box**		
	180-00217-01	Control Box	1
	508-00002-08	Nut,SP,Cage,1/4-20,.125-.156	3
	504-00002-23	Scr,cap,cntrsnk,hex sckt,5/16-18x1",blk	4
	508-00001-02	Nut,SP,Hex,5/16-18	4
	513-00003-01	Washer,SS,Hel Sprg Lk, 5/16,SAE	4
	513-00009-03	Washer,SS,5/16" ID	4
	Control Box Components		
	180-00217-01	Control Box	1
	571-00001-02	Timer,shutdown,for NG,TSB2190	1
	505-00007-05	Bolt,SS,Hex,No.10-24x1.25"	1
	513-00007-01	Washer,SS,Plain,No.10	2
	513-00001-02	Washer,SS,Hel Sprg Lk,No.10-24,SAE	1
	508-00001-04	Nut,SP,Hex,#10-24	1
	456-00001-01	Terminal Block,#600A-GP-12	1
	505-00008-02	Screw,SS,Pan head slotted,No.6-32x.75"	4
	512-00005-01	Washer,SP,Flat,No.6,SAE	4
	513-00001-03	Washer,SS,Helical spring lock, No.6-32, SAE	4
	508-00001-06	Nut,SP,Hex,#4-40	4
	450-00001-01	Switch,rocker,low-amp	2
	450-00007-01	Switch,momentary,Carlingswitch,24V3	1
	455-00008-01	Pulse relay C-BATES S89R5ABD1-24	3
	571-00006-01	Hourmeter, Hobbs, 24V BRACKET MT	1
	451-00016-01	Contactor, 10HP, 3PH, ABB#B40C-F	1
	451-00013-01	Overload, thermal, ABB#T75DU42	1
	573-00004-01	Thermostat, 250 degree	1
	574-00002-01	Pressure switch	2
	580-00001-02	Conn, SP, cable grip, 3/4"	1
	580-00001-03	1" Romex connector	1
Ignition Control Assembly			
11	**Control Box and Components**		
	430-00013-01	Cable, Pilot ignition, #394800-30	1
	455-00003-01	Controller, #S8600M1013	1
	180-00102-01	Pilot bracket for round ring burner	1
	505-00001-01	Bolt, SS, Hex,1/4-20, .5"	2
	459-00003-01	Enclosure, Vnykier #VM775CT	1
	505-00008-02	Screw, SS, Pan head slotted, No.6-32x.75"	4
	512-00005-01	Wshr, SP, Flat, No.6, SAE	4
	513-00001-03	Wshr, SS, Helical spring lock, No.6-32, SAE	4
	508-00001-06	Nut, SP, Hex, #4-40	4
	580-00001-04	1/2" cable grips	3
	567-00011-01	Nut, nylon, 1/2", heyco #8463	3
	505-00003-03	Bolt, SS, Hex, 3/8-16x1"	2
	513-00010-04	Washer, SS, 3/8"ID, 1"OD, .083"THK	4
	513-00004-01	Washer, SS, Helical spring lock, 3/8, SAE	2
	508-00001-03	Nut, SP, Hex, 3/8-16	2
	430-00016-02	High temp ground lead 22 GA.	22"

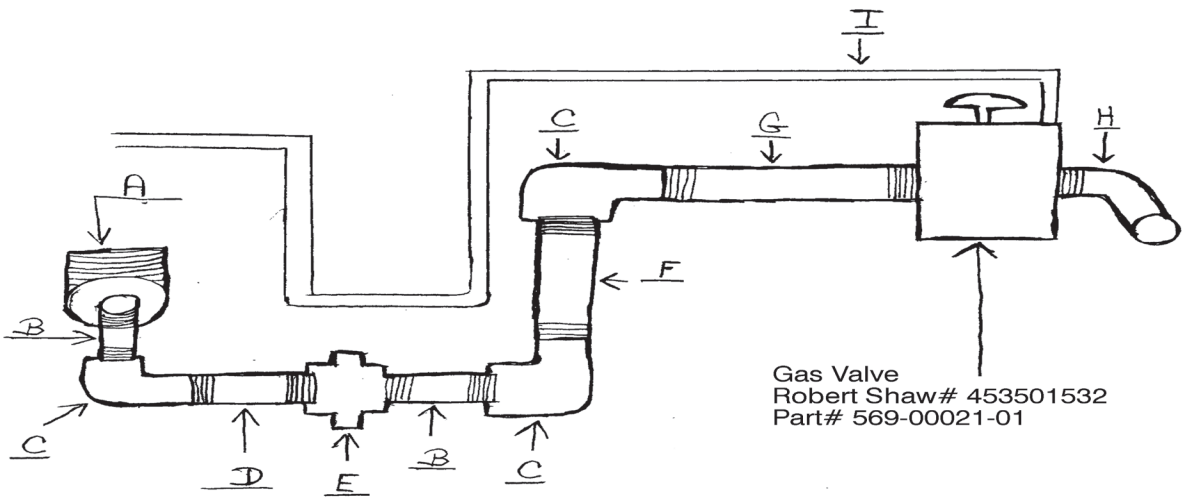
Hose, Wand & Gun



Ref.#	Part #	Description	Qty.
1a	270-00011-01	Nozzle, Water #9.0 0° (HV 1000, 1500)	1
1b	270-00011-02	Nozzle, Water #9.0 15° (HV 1000, 1500)	1
1c	270-00011-03	Nozzle, Water #9.0 25° (HV 1000, 1500)	1
1d	270-00011-04	Nozzle, Water #9.0 40° (HV 1000, 1500)	1
1e	270-00017-01	Nozzle, Water #11.0 0° (HV 2000)	1
1f	270-00017-02	Nozzle, Water #11.0 15° (HV 2000)	1
1g	270-00017-03	Nozzle, Water #11.0 25° (HV 2000)	1
1h	270-00017-04	Nozzle, Water #11.0 40° (HV 2000)	1
2	265-00001-01	36" Wand, Insulated	1
3	275-00001-01	ST1500 Trigger Gun	1
4	552-00002-01	3/8" Quick Connect, Male	1
5	284-00004-01	Hose 3/8" X 50"	1

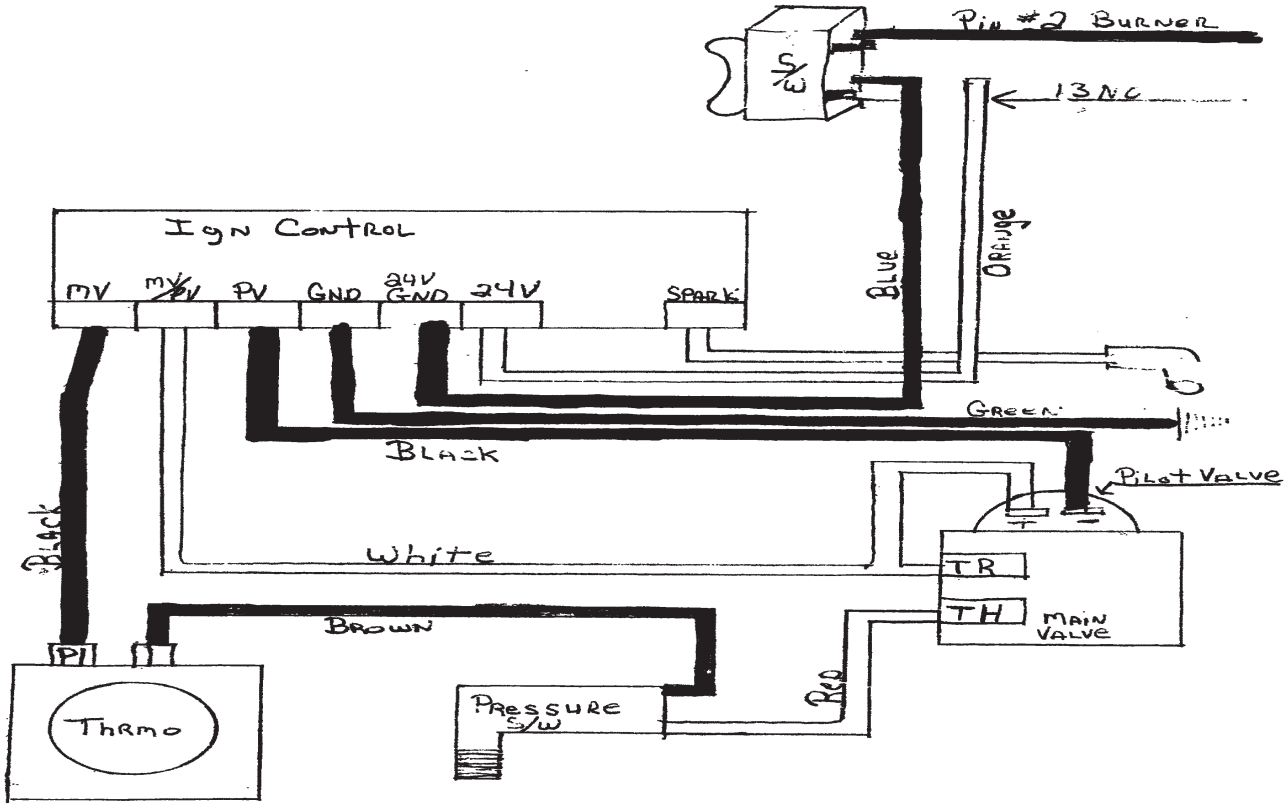

ALL SINGLE AND THREE PHASE UNITS
208/230 and 460 VOLT
ELECTRICAL SCHEMATIC
HV SERIES NG/LP
GAS UPGRADE
PILOT
LINE POWER INPUT
(PROVIDED BY CUSTOMER)
GAS VALVE
HONEYWELL S8610U
Added for 1 PH units
CONTACTOR
Removed for 1 PH units
PRESSURE SW
ELEC MOTOR
THERMOSTAT
TIMER
208/230V
BLK/RED STRIPE 460V
BLACK
RED
24 V
HOURMETER
DETERGENT SW
BURNER SW
PUMP SW
HIGH LIMIT SWITCH
ST 261 UNLOADER SW
DETERGENT VALVE (REMOTE KIT ONLY)
REMOTE PUMP ON
REMOTE BURNER ON
DETERGENT ON
REMOTE 24V POWER
REMOTE COMMON
New Wiring Effective 10/01/2003

HV Gas Plumbing



A: 1.5" x 1" adaptor
B: 1" close nipple
C: 1" 90° elbow
D: 1" nipple - 2" long
E: 1" pipe union
F: 1" nipple - 4" long
G: 1" nipple - 6" long
H: 1" 45° elbow
I: pilot line 30" long

HV Burner Schematic



Troubleshooting

problem	cause	action
Low Water Pressure	Insufficient water source Old or incorrect nozzle Plumbing or hose leak Obstruction in spray nozzle Chemical valve open Unloader valve worn Pump valves dirty or worn	Check hose size/water source Replace nozzle Tighten, repair or replace leak Clean or replace nozzle Close valve or submerge hose Replace unloader Clean or replace packing/valves
No Chemical Flow	Detergent valve closed Low detergent level Chemical screen dirty	Open detergent valve Fill detergent container Clean detergent screen
Pilot will not light Burner will not fire	No fuel Burner switch turned off Thermostat set too low Defective pressure switch Trigger not pulled Gas valve turned off No voltage to valve Pilot orifice plugged Defective ignition module Defective transformer Defective thermostat Faulty rocker switch Igniter not working	Ensure proper gas flow Turn burner switch on Reset thermostat Replace pressure switch Burner should fire only when trigger pulled Turn gas valve on Check voltage between valves Remove orifice & clean Check voltage to & through module. Replace transformer Replace thermostat Replace switch Test for spark and continuity between ignition wire and ground *WARNING: High voltage ignitor can cause electrical shock.*
Pilot lights, but burner will not fire	Check for 24v between main valve and pilot valve	If no voltage at the valve, replace module If voltage, replace valve
Burner fires, but goes out	Check for continuity between ignition cable and ground wire Faulty ignition module Excess draft	Assure good ground Replace module Protect from windy conditions
Discharge water temperature too high	Faulty thermostat Water restriction Incoming gas pressure too high	Replace thermostay Clean or replace spray nozzle Descale coil Check and lower gas pressure
Discharge water temperature not reaching maximum temp setting.	Worn spray nozzle Gas pressure too low Draft under burner manifold	Replace spray nozzle with proper size Increase gas pressure Prevent down draft with installation ofdraft diverter
Burner continues to fire even when water not being sprayed	Faulty pressure switch Main gas valve stuck open	Replace pressure switch. Replace main gas valve.
Pressure Relief Valve Leaks	Nozzle is dirty Defective relief valve Unloader adjusted incorrectly Restriction on discharge hose Scale restricting flow in coil	Clean or replace nozzle Replace relief valve Adjust unloader valve Remove nozzle and flush line Clean coil
Pump Motor Not Running	Pump motor switch off GFCI tripped No voltage to machine Clogged water nozzle Insufficient voltage/amperage	Turn on pump motor switch Reset and test GFCI Check power source Clean water nozzle Use proper drop cord
Pump Noisy	Air in suction line Pump valves dirty Check valve springs worn Low pump oil Pump bearings are worn Incoming water too hot	Check inlet water fittings Clean/replace pump valves Replace check valves Add SEA 30wt. non-detergent Replace/rebuild pump Reduce temperature/ambient
Water In Oil	High humidity environment Oil seal worn Plunger packing worn	Change oil frequently Check and replace oil seal Check and replace packing
Water Dripping/Pump	Plunger packing is worn Plunger retainer oil ring worn Cracked ceramics	Install new packing kit Replace oil ring Replace ceramics
Oil Dripping	Oil seal worn Cracked manifold	Check and replace oil seals Replace manifold
Fluctuating Pressure	Unloader not adjusted Valves worn Dirt or blockage in valves Pump sucking air Worn plunger packing	Adjust to specifications Replace with valve kit Clean or replace valve Check water/detergent supply Replace packing kit
Pump Head Overheating	Extended period in bypass	Pull trigger gun for water flow

RAMTEQ

Limited One Year
WARRANTY

Ramteq Incorporated ("RAMTEQ") warrants that the Product you have purchased from RAMTEQ or from an Authorized RAMTEQ Reseller is free from defects in materials or workmanship under normal use for a period of one (1) year from the date of purchase. This warranty extends only to you, the original Purchaser. It is not transferable to anyone who subsequently purchases the Products from you. This warranty specifically excludes expendable items, including but not limited to hoses, seals, nozzles and gunjets. RAMTEQ manufacturers warrant certain components of the Products for periods greater than one (1) year. MOTORS, GENERATORS, PUMPS, COILS, BURNERS AND ENGINES ARE WARRANTED BY THEIR RESPECTIVE MANUFACTURERS, AND SERVICED THROUGH THESE MANUFACTURERS' LOCAL AUTHORIZED SERVICE CENTERS. Specific warranty details can be found on the individual manufacturers website. RAMTEQ CANNOT PROVIDE WARRANTY ON THESE ITEMS.

During the warranty period, RAMTEQ will repair or replace defective parts, at the option of RAMTEQ.

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U.S.A. State Laws

Some states do not allow limitation on how long an implied warranty lasts. In such states, the limitations or exclusions of this Limited Warranty may not apply to you.

Some states do not allow the exclusion or limitation in incidental or consequential damages for consumer products. In such states, the exclusion may not apply to you. This limited warranty gives you specific legal rights. You may also have other rights that may vary from state to state. You are advised to consult applicable state laws for a full determination of your rights.

How to Obtain Warranty Service

TO OBTAIN WARRANTY SERVICE YOU MUST CONTACT RAMTEQ or an AUTHORIZED RAMTEQ RESELLER.

Manufacturers Warranty Period

Click on pictures to open manufacturers website.

5 years

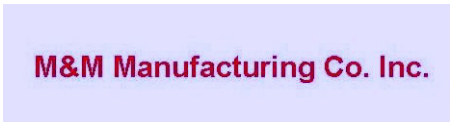
5 years

3 years

3 years

3 years

18 months



3 years

18/36 months

1 year